

ABSTRACT

A unique, solid flat panel lighting emitting luminaire has been created that utilizes a light source remote from the luminaire coupled with a hollow light pipe. The light panel luminaire is fed light flux via a hollow light pipe system into one or two edges of the flat panel. The light panel has imbedded irregular tapered tetrahedron light guides that emit light in a uniform controlled fashion over the length of the emitting surface. The subject lighting luminaire provides light emitted from an adjacent High Intensity Discharge (HID) light source. The luminaire is specifically designed to provide light over a large surface for backlit billboard applications without the limitations of traditional fluorescent light source light boxes. The luminaire does not require any maintenance to its interior as the light source is remote from the emitting surface. The luminaire is one continuous surface without visible seams, that would allow direct attachment of paint or transparency informational signage or simply provide a large surface of homogenous light for a back lit replaceable mediums. The light panel design allows the use of a signal or multiple light sources within a hollow light pipe light concentrator. One or more lamp types such as metal halide and/or high pressure sodium could be combined to deliver a color balanced light flux light source. The longevity and high efficiency of the HID light source light bulbs over fluorescent bulbs is well known. The light source is remote from the light emitting surface and allows any transparent, semi-transparent or semi-opaque material to be installed permanently or temporarily without having to be removed from the light panel emitting surface to facilitate bulb replacement or light box maintenance. The tapered hollow light pipe concentrator efficiently collects light flux and delivers the flux to the edge of the light panel without using glass or plastic fiber optic light guides. Light emitting panel sections can be fabricated and assembled into one homogeneous surface for any usual billboard size.